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From the Proceedings of the Boston Society of Natural History, April 2, 1862, and December 16, 1863.

# OBSERVATIONS ON THE SKELETON OF A HOTTENTOT.

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The subject was nearly adult, and came to his death by suicide. The chest was well formed and prominent: the shoulders were well made but not broad; the loins very hollow; the hips narrow; the thighs full and feminine, and the calves of the legs slender. There was no beard, no hair in the axillæ nor on the pubes. The ears were rather oval, small, and had only a small lobule. The webb between the fingers was more extensive than usual, and gradually increased in breadth from the index to the little finger, where it reached as far as the joint between the first and second phalanx. The epiphyses of the long bones were still unattached, but the wisdom-teeth were mature.

| | Inches. |
|---|---|
| Height of body | 65½ |
| Spread of arms from tip to tip of middle fingers | 66 |
| From top of head to top of trochanter | 29½ |
| From top of trochanter to sole of foot | 36 |
| Breadth of shoulders | 13 |
| Breadth of waist | 9½ |
| Breadth of hips through trochanter | 11¼ |
| Length of arm from acromion | 30½ |
| Length of thigh | 18 |
| Length of leg from top of tibia to sole | 18 |
| Length of hand | 7¼ |
| Length of foot | 9 |

The brain weighed 3 lbs. 2 oz. Av. which is about the average weight of an European brain. There are no weights of brains of Hottentots given in the tables of the comparative weights of the human brain. Dr. Morton gives the measurements of three Hottentot crania, the average capacity of which is 75 cubic inches. A cubic inch of brain is estimated to weigh 259.57 grains, and this multipled by 75 would give as the whole weight about 2 lbs. 12 oz. Av.

The individual was unusually tall for a Hottentot, and measured five feet and five inches in height. A comparison of Hottentot and Bushman skeletons, and casts of bodies, contained in the museums of London and Paris, give an average height of four feet and six inches. While the height of the body just equalled the distance between the tips of the fingers, the arms being outspread, the legs were dispropor-

tionately long, so that the pubes was more than five inches above the centre of the whole height.

In the external configuration of the cranium proper, there was nothing remarkable, except that the top was somewhat flattened, the forehead narrow, sloping outwards and backwards from a somewhat prominent ridge, corresponding with the obliterated frontal suture.

When held at arm's-length, and viewed from above, the zygomatic arches are just in sight; but the fossæ are nearly concealed. The measurements show that the cranium is not brachycephalic, as in the Mongolians, but decidedly elongated, as in the Negroes.

The most striking features to be seen in the head are those found in the bones of the face, especially in the nasals, maxillaries, and malars.

*The nasals* are completely co-ossified with each other, no trace of a suture remaining. This was the more noticeable, as the individual was young, and the bones of the skeleton generally are immature; and has an interest in connection with the fact that the nasal bones are co-ossified at an early period in the monkeys, and before the completion of the first dentition in the Gorillas and Chimpanzees. These bones in the Hottentot are remarkable for their great breadth, especially at the upper part, which is the broadest portion of them. They do not recede from the outline of the frontal bone, which is continued, without interruption, to the middle of the nose, where the bones project very slightly forwards. In a transverse direction, they are nearly flat, with only a scarcely discernible ridge at their line of union: they are consequently nearly in the same plane with the anterior edge of the upper ends of the maxillaries. The naso-frontal suture is horizontal for the distance of half an inch, is bent down at either end to become continuous with the fronto-maxillary suture, and is remarkable for its great length. The breadth of the root of the nose is dependent on the nasals, and not upon the breadth of the ascending part of the superior maxillary bones, as stated by Dr. Knox.*

*Malar bones.* These, with the outer portion of the maxillaries, are remarkably bulging and rounded. The portions of the edges of the orbits formed by them, instead of being somewhat sharp, as in other crania, are quite noticeable for their roundness. The zygomatic arches do not differ from those of ordinary crania in their projection outwards.

*Maxillary bones.* The edges of the ascending portions of the *upper jaw*, where they form the border of the nares, project very little beyond the level of the face, and are bent inwards, instead of being directed forwards. It is in consequence of this, and the flatness of the nasal

* Quoted by Prichard. Researches into the Phys. Hist. of Man, vol. i. p. 313. London: 1851.

bones, that the middle portion of the face is so slightly prominent. The alveolar borders are remarkably prominent, forming a somewhat pointed arch; the space occupied by the incisor teeth being narrow, and the lateral incisors facing more outwards than forwards. No trace of an intermaxillary suture could be detected.

The outline of the alveolar portion of the *lower jaw* corresponds with that of the upper; the symphysis is remarkably high, and the chin strikingly pointed and prominent. The height of the bone diminishes rapidly backwards, and the angles are not prominent. This description agrees with that of Cuvier, as regards the prominence of the jaw; and differs from that of Blumenbach, who asserts that the jaw does not project at all.

*The orbits* are quadrangular; the tranverse diameter considerably the longest.

*Interior of the cranium.* The most striking feature here is the narrowness and the diminutive size of the fossæ for the lodgement of the anterior cerebral lobes. The orbitar plates of the frontal bones rise higher above the cribriform plate of the ethmoid bone, and make the olfactory fossa deeper, than in ordinary crania: they ascend rapidly on each side, thus projecting into the cavity of the head at the expense of the space usually occupied by the anterior lobes of the brain.

The foramen magnum was rather under than over the average size; and, in this respect, differs from Cuvier's description of the same part in the Hottentot Venus, in which he says that it is proportionally larger than in other heads, and, "according to the views of Sömmering, would indicate an inferior nature."

The capacity of the cranium was measured by Dr. J. C. White, the Curator of Comparative Anatomy, and found to be eighty-two cubic inches.

MEASUREMENTS OF THE CRANIUM.

| | |
|---|---|
| Circumference of cranium | 20.75 |
| From one auditory meatus to the other over vertex | 12.50 |
| Longest diameter of cranium outside | 7.45 |
| Greatest transverse diameter outside | 5.60 |
| From anterior edge of foramen magnum to alveoli | 3.85 |
| From anterior edge of foramen magnum to occiput | 3.65 |
| Length of cranium and face from alveoli to occiput | 7.50 |
| Breadth across malar bones | 4.35 |
| Breadth across zygomatic arches | 5.30 |
| Transverse diameter of orbit | 1.68 |
| Vertical diameter of orbit | 1.32 |
| Inter orbitar space | 1.00 |
| Length of nasal bones | .97 |
| Transverse diameter, above | .63 |
| Transverse diameter, middle | .41 |
| Transverse diameter, lower portion | .53 |
| Height of the symphysis of the lower jaw, exclusive of teeth | 1.64 |

| | |
|---|---|
| Breadth of lower jaw, through angles | 3.55 |
| Longitudinal diameter of cranium, inside | 6.90 |
| Transverse diameter of cranium, inside | 5.18 |
| Height of cranium, inside | 4.62 |
| Greatest breadth of anterior cerebral fossa | 4.00 |
| Greatest breadth of cerebellar fossa | 4.37 |
| Length of foramen magnum | 1.48 |
| Breadth of foramen magnum | 1.16 |

*Pelvis.* — This is very remarkable for its diminutive size, and, when seen in front, for its square form. From the table of measurements, it will be seen that the breadth of it is but little in excess over the height. While, in ordinary skeletons of Europeans, the former dimension exceeds the latter by between two and three inches, in this Hottentot it is only by 0.33 of an inch. The height of the crests of the ilia above the base of the sacrum is also greater than in the common pelvis: for although the pelvis of the Hottentot is so small, yet the cristæ are 1.45 of an inch above the sacrum; while, in two average pelves of white men, they were only from 1.20 to 1.25 of an inch.

The *sacrum* is very straight, and projects more backwards than usual; and the base of it is very narrow. In Caucasians, the sacrum without the coccyx forms nearly an equilateral triangle, the vertical diameter being slightly the largest. In the Hottentot, the vertical diameter is four inches; while the transverse is only 3.27 of an inch.

The anterior spinous processes of the *ilia* project almost directly forward, even in a much more marked degree than is common in the Caucasian pelvis; the iliac bones seem compressed from side to side: all of which gives to these parts a nearly vertical wall. The diameters of the brim do not differ materially in their relative size from the same in European skeletons; it being understood that these are liable to considerable variations. In the texture of the bones, the pelvis presents neither that massiveness nor the roughness which has been said to characterize this part in the Hottentots.

The resemblances of this Hottentot pelvis to that of the apes are trifling in comparison with the differences; these last being so great, that no one would hesitate in the slightest degree as to whether the pelvis in question belonged to the human family or not. The resemblances which really exist, with the exception of those belonging to the sacrum, are only shown by a close comparison of measurements.

The pelvis of the most anthropoid animals — viz., of the chimpanzee and gorilla — is characterized in a most marked degree, as differing from that of man by its relatively as well as absolutely greater length; by having the crests of the ilia in planes more nearly transverse; by having the brim of the pelvis in the form of an elongated oval, with the diameter from before backwards much the longest; by having the plane of the brim of the pelvis so inclined towards the vertebral column as to

make with this last a much more open angle; in having the ischia longer, as shown by the space which separates the cotyloid cavity from the tuberosity, — the tuberosities longer, their extreme points more widely separated; in the extension of the rough surface of the tuberosity for the attachment of the muscles, as far as the symphysis; and in the greater extent of the union of the bones of the pubes with each other at the symphysis.

The sacrum of the anthropoids is also quite marked, in having its length greater in proportion to the breadth of its base.

The most striking approximation of the Hottentot pelvis to that of the anthropoids is to be found in the sacrum; for while in the Caucasian the longitudinal diameter of the bone exceeds the transverse by only 0.10 of an inch, as in $E^2$, and is even less by 0.10, as in $E^1$, of the following table, in the Hottentot it is longest by 0.73, in the Gorilla by 0.84, and in the Chimpanzee by 0.85, of an inch. If we take into consideration the straightness of it, it will be seen, that, in the respects mentioned, it comes nearer to that of the anthropoids than of the Caucasians; but in its size, in proportion to the whole pelvis, it differs very much from the apes, and much more closely resembles the same part in man.

MEASUREMENTS OF THE PELVIS

In two Europeans, a Hottentot, a Chimpanzee, and a Gorilla.

| | $E^1$ | $E^2$ | H. | C. | G. |
|---|---|---|---|---|---|
| Height of pelvis | 8.50 | 7.50 | 7.17 | 11.00 | 15 10 |
| Breadth across ilia | 11.50 | 10.00 | 7.50 | 9.86 | 17.70 |
| Breadth across middle of posterior edge of the acetabulum | 7.40 | 6.90 | 6.50 | 5.62 | 8.70 |
| Breadth of ilia through superior spinous processes | 6.13 | 6.00 | 5.16 | 4.58 | 9.53 |
| From spine of pubes to tuberosities of ischia | 4.80 | 4.50 | 4.00 | 4.68 | 6.65 |
| Antero-posterior diameter of brim | 3.80 | 4.20 | 3.35 | 6.10 | 8.00 |
| Transverse diameter of brim | 5.00 | 4.45 | 3.85 | 4.00 | 6.10 |
| Length of sacrum without coccyx | 4.30 | 4.20 | 4.00 | 3.75 | 5.54 |
| Breadth of sacrum | 4.40 | 4.10 | 3.27 | 2.90 | 3.70 |
| Height of crest of ilia above the base of the sacrum | 1.25 | 1.20 | 1.45 | 2.20 | 3.20 |

*Limbs.* — The bones of the upper limbs present, in a somewhat marked degree, a difference in the length of corresponding bones on the right and left sides, as will be seen by the accompanying table of measurements. The difference between the lengths of the ulna and humerus, though somewhat less than in the average, is, nevertheless, not uncommon in European skeletons. The humerus is perforated at its lower end, on one side by a very small opening, and on the other has only a thin plate between the olecranon and coronoid fossæ. Of seven

skeletons of pure negroes which we have examined, the humerus was perforated on *both* sides in three, on *one* side in one, and on *neither* side in three.

The thigh-bones offered nothing unusual, either as to the shaft or neck. The tibiæ are remarkable for their length in proportion to that of the femora. When the two bones are placed side by side, the lower ends of both on the same level, the tibia reaches as high as the middle of the neck of the femur; while in the skeleton of a European it only reaches as far as the lesser trochanter. The upper end of the tibia is quite small, and its protuberance scarcely rises above the surface: the shaft forms an equilateral triangle; and, instead of having the anterior edge quite sharp and prominent as in Europeans, it is rounded.

The os calcis is more slender than in ordinary skeletons, and is particularly remarkable for having the tuberosity and neck only slightly exceeding the rest of the bone in their vertical diameter.

MEASUREMENTS OF BONES OF LIMBS.

| | E. | H. | G. | Ch. |
|---|---|---|---|---|
| Length of right humerus | 13.10 | 12.45 | 19.00 | 11.70 |
| Length of left humerus | 12.90 | 12.00 | " | " |
| Length of right ulna | 10.40 | 10.30 | 15.20 | 10.60 |
| Length of left ulna | 10.30 | 10.00 | " | " |
| Length of right clavicle | 5.40 | 5.00 | | |
| Length of left clavicle | 5.57 | 5.35 | | |
| Length of femur | 18.00 | 17.20 | 15.70 | 11.65 |
| Length of tibia | 15.00 | 15.00 | 13.00 | 9.55 |
| Length of astragalus | 3.17 | 3.05 | 4.05 | |
| Height of tuberosity of os calcis | 2.00 | 1.62 | 1.85 | |
| Height of neck | 1 75 | 1.38 | 1.15 | |
| Height at posterior edge of upper articular ridge | 2.18 | 1.50 | 1.50 | |

Mr. C. J. Sprague inquired whether this individual might not be considered as a somewhat gigantic representative of his race, and whether variations in height were as common among savage as among civilized races.

Dr. Wyman replied that the range of variation in height, as far as known, was much the greatest in the latter. O'Brien, the Irish giant, whose skeleton is preserved in the Hunterian Museum in London, was eight feet and four inches in height; while Borvlasky, the Polish dwarf, was less than three feet. No such difference as this is known among the savage races. Wild and domesticated animals of the same species offer similar differences.

Prof. Daniel Wilson remarked that the cranium of this Hottentot appeared to be very fairly developed; and, in speaking of the great disparity between the lower races of men and the anthropoid apes, noticed that the distinctions in the cranium of the higher and lower races of men partook much more of facial than of cerebral character.